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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/727,645	12/05/2003	Yoshinori Ogawa	12480-000030/US	8967

30593 7590 08/04/2009

HARNESS, DICKEY & PIERCE, P.L.C.
P.O. BOX 8910
RESTON, VA 20195

EXAMINER	
SITTA, GRANT	

ART UNIT	PAPER NUMBER
2629	

MAIL DATE	DELIVERY MODE
08/04/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/727,645	OGAWA ET AL.	
	Examiner	Art Unit	
	GRANT D. SITTA	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 June 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14 and 16-36* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14 and 16-36* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *05 December 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *6/10/2009*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 1,2,6,8,10,12,13,21, 28 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yanagi et (2002/0063669) hereinafter, Yanagi in view of Nomura et al (6,181,310) hereinafter, Nomura.

4. In regards to claim 1, Yanagi discloses the limitations of a liquid crystal display device (fig. 1 (1)), comprising:

a plurality of scanning lines (fig. 1 lines from 2);

a plurality of signal lines provided so as to cross the scanning lines (fig. 1, lines from 3);

a liquid crystal layer having a characteristic that a viewing-angle-derived difference of luminance of pixels occurs between target pixels, which are at different positions and receive a same driving voltage, by a difference of their viewing angles on viewing from one viewing point (fig. 12 LCD Examiner notes this is a characteristic of LCDs because their nature. LCD work similar to window shutters and according to the viewing angle different amounts of light will be seen), due to asymmetry of alignment direction of the liquid crystal molecules ([0038] "display which allows for reducing the aforementioned difference in brightness that occurs between the top and bottom of the display screen in frame inversion drive."). Examiner notes Yanagi works to solve the same problem with differences in brightness or luminance that occurs from different viewing angles or from the top and bottom.

pixel capacitors (fig. 21 (12)), respectively formed on pixels corresponding to intersections of the scanning lines and the signal lines (fig. 12 (intersection of G(1) and (S1)), which include pixel electrodes and common electrodes (fig. 12 (intersection of G(1) and (S1), abstract and [0077]), and correspond to the liquid crystal layer ([0038]); and

a common electrode voltage supplying circuit for supplying common electrode voltages to the common electrodes (fig. 1 (5)), said common electrode voltage supplying circuit being capable of adjusting the common electrode voltages (fig. 13 (Vcom1 is adjusted)) and changing the common electrode voltage depending on a position of the pixels in the liquid crystal panel that such driving voltages so as to decrease the viewing-angle-derived difference of luminance of pixels are generated (fig.

13 (Vcom1 is adjusted) [0038]). Fig. 12 Vcom1 and Vcom2. Examiner notes there are two Vcoms that are controlled different according to fig. 13. Both of which are controlled differently depending on the position of the pixel (i.e., pixels connected to Vcom1 are changed relative to those connected to Vcom2 and their corresponding postion.)

Yanagi differs from the claimed invention in that Yanagi does not *explicitly* disclose a liquid crystal layer having liquid crystal molecules, each of which has a substantially fixed twist angle in a direction perpendicular to substrates sandwiching the liquid crystal layer.

However Nomura discloses a liquid crystal layer having liquid crystal molecules, each of which has a substantially fixed twist angle in a direction perpendicular to substrates sandwiching the liquid crystal layer (fig. 9 and 17 col. 7-8, lines 28-20).

It would have been obvious to one of ordinary skill in the art, at the time of the invention, to modify Yanagi to include the use of liquid crystal as taught by Nomura with various states for the liquid crystal molecules in order to provide rapid attenuation of the display state known as frame response as stated in (col. 2, lines 30-54 of Nomura).

5. In regards to claim 28, Yanagi discloses the limitations of a method for driving a liquid crystal display device which includes (fig. 1 (1)):

a plurality of scanning lines (fig. 1 lines from 2); a plurality of signal lines provided so as to cross the scanning lines (fig. (fig. 12 (intersection of G(1) and (S1));

pixel capacitors (fig. 21 (capacitors)), having pixel electrodes and common electrodes (fig. 12 (intersection of G(1) and (S1 and [0077]) and abstract), and corresponding to a liquid crystal layer ([0038]), which are respectively formed on pixels corresponding to intersections of the scanning lines and the signal lines (fig. 12 (intersection of G(1) and (S1)), and

a liquid crystal layer having a characteristic that a viewing-angle-derived difference of luminance of pixels occurs between target pixels, which are at different positions and receive a same driving voltage, by a difference of their viewing angles on viewing from one viewing point (fig. 12 LCD Examiner notes this is a characteristic of LCDs because their nature. LCD work similar to window shutters and according to the viewing angle different amounts of light will be seen), due to asymmetry of alignment direction of the liquid crystal molecules ([0038] "display which allows for reducing the aforementioned difference in brightness that occurs between the top and bottom of the display screen in frame inversion drive."). Examiner notes Yanagi works to solve the same problem with differences in brightness or luminance that occurs from different viewing angles or from the top and bottom,

said method comprising the step of supplying common electrode voltages (fig. 1 (5))adjusting the common electrode voltages (fig. 13 (Vcom1 is adjusted)) and changing magnitudes of the common electrode voltages depending on a position of the pixels in the liquid crystal panel so that such driving voltages as to decrease viewing-angle-dervied the difference of luminance of pixels are generated (fig. 13 (Vcom1 is adjusted) [0038]). Fig. 12 Vcom1 and Vcom2. Examiner notes there are two Vcoms that are

controlled different according to fig. 13. Both of which are controlled differently depending on the position of the pixel (i.e., pixels connected to Vcom1 are changed relative to those connected to Vcom2 and their corresponding postion.)

Yanagi differs from the claimed invention in that Yanagi does not *explicitly* disclose the liquid crystal layer has liquid crystal molecules, each of which has a substantially fixed twist angle in a direction perpendicular to substrates for sandwiching the liquid crystal layer.

However Nomura discloses the liquid crystal layer has liquid crystal molecules, aligned in random directions throughout a liquid crystal panel, each of which has a substantially fixed twist angle in a direction perpendicular to substrates for sandwiching the liquid crystal layer (fig. 9 and 17 col. 7-8, lines 28-20).

It would have been obvious to one of ordinary skill in the art, at the time of the invention, to modify Yanagi to include the use of liquid crystal as taught by Nomura with various states for the liquid crystal molecules in order to provide rapid attenuation of the display state known as frame response, as stated in (col. 2, lines 30-54 of Nomura).

6. In regards to claim 2, Yanagi teaches wherein: the common electrodes of the pixels are divided into a plurality of groups (fig. 12 (Vcom 1 and Vcom 2)), and the common electrode voltage supplying circuit is capable of respectively adjusting the common electrode voltages so that the common electrode voltages are adjusted independently for each group (fig. 13 Vcom1 and Vcom2) [0102] and [0128].

7. In regards to claim 6, Yanagi teaches wherein the common electrodes are grouped for n lines of the scanning lines (n includes one), where n is a positive integer (fig. 12 the scanning lines are at least grouped into one group [0102] and [0128]).

8. In regards to claim 8, Yanagi teaches the liquid crystal display device wherein: the common electrode voltage supplying circuit supplies a common electrode voltage which functions as a reference common electrode voltage to a group *corresponding* to a scanning line positioned on a first side of the liquid crystal display device one side in a direction in which the scanning signals are disposed (fig. 12 Vcom1), and the common electrode voltage supplying circuit supplies a common electrode voltage which has a value different from a value of the reference common electrode voltage to a group corresponding to a scanning line positioned on a second side of the liquid crystal display device in the direction in which the scanning signals are disposed (fig. 12 Vcom2).

9. In regards to claim 10, Yanagi teaches the liquid crystal display device as set forth in claim 6, wherein: the common electrode voltage supplying circuit supplies a common electrode voltage which functions as a reference common electrode voltage to a first group corresponding to a scanning line centered in a direction in which the scanning lines are disposed [0102], and the common electrode voltage supplying circuit

supplies a common electrode voltages which is higher than the reference common electrode voltage to a second group corresponding to a scanning line positioned on the one side in the direction in which the scanning lines are disposed [0102-0103], and

Yanagi and Nomura fail to disclose the common electrode voltage supplying circuit supplies a common electrode voltage which is lower than the reference common electrode voltage to **a third group** corresponding to a scanning line positioned on the other side in the direction in which the scanning lines are disposed.

However, under St. Regis Paper Co. v. Bemis Co., Inc. 193 USPQ 8, 11 (7th Cir. 1977) it is generally considered obvious to one of ordinary skill in the art to duplicate parts for multiple effect.

Therefore it would have been obvious to one of ordinary skill in the art to have modified Yanagi and Nomura to include the common electrode voltage supplying circuit supplies a common electrode voltage which is lower than the reference common electrode voltage to **a third group** corresponding to a scanning line positioned on the other side in the direction in which the scanning lines are disposed, when a first and second group are taught above in order to increase the size of the display.

10. In regards to claim 12, Yanagi discloses a signal line driving circuit for supplying a display signal voltage to each of the signal lines (fig. 1 (2).

Yanagi fails to disclose wherein the common electrode voltage supplying circuit is provided in the signal line driving circuit.

However, *In re Larson*, 144 USPQ 347 (CCPA) states it is generally it is obvious to one of ordinary skill in the art to make parts integral.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have the common electrode voltage supplying circuit be provided in the signal line driving circuit, since integrating parts can make the size smaller and easier for repair.

11. In regards to claim 13 Yanagi teaches the liquid crystal display device as set forth in claim 6, wherein the common electrode voltage supplying circuit adjusts the common electrode voltages supplied to the groups so that luminance of the pixels gradually varies [0102] so as to be monotonously darker or so as to be monotonously brighter from one end side to a center of the scanning lines in a direction in which the scanning lines are disposed ([0038] “An objective of the invention is to offer an active matrix liquid crystal display and a method of driving the display which allows for reducing the aforementioned difference in brightness that occurs between the top and bottom of the display screen” Yanagi). Examiner notes that Yanagi teaches adjusting the luminance [0102] and that such adjustments must be either monotonously darker or monotonously brighter.

12. In regards to claim 21, Yanagi teaches the liquid crystal display device as set forth in claim 1, comprising:

Signal line driving circuit (fig. 1 (2)) for supplying a display signal voltage to each of the signal lines (fig. 1 G(1), G(2)-(G(J)); and a reference voltage generating circuit for generating reference voltages (fig. 2 (4)), having plural levels different from each other (fig. 2 (4) Vsp and Vsn)), which are supplied to the signal line driving circuit so as to make gradation display in accordance with a display signal [0080-0082], said reference voltage generating circuit being capable of adjusting the reference voltages [0080].

13. In regards to claim 35, Yanagi teaches the liquid crystal display device as set forth in claim 2, wherein the common electrode voltage supplying circuit adjusts the common electrode voltages to correct luminance and color variation of the pixels such that a visual angle with respect to the liquid crystal panel, viewed at least from an arbitrary position in front of the liquid crystal display device in a direction perpendicular to an extending direction of the scanning lines, is wider than a visual angle if the common electrode voltages of all the groups are equal to each other ([0102] Yanagi). Examiner notes that it is inherent that uniform brightness and improved image quality will increase the viewing angle.

14. Claims 3-5, 7, 9, 11, 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yanagi and Nomura, and further in view of Tomita et al (5,686,932) hereinafter, Tomita.

15. In regards to claim 3, Yanagi and Nomura differs from the claimed invention in that Yanagi and Nomura do not explicitly disclose at least first pixel capacitors and second pixel capacitors are provided on each of the pixels as the pixel capacitors

However, Tomita teaches a system and method for at least first pixel capacitors and second pixel capacitors are provided on each of the pixels as the pixel capacitors (fig. 1 Clc and Cs).

It would have been obvious to one of ordinary skill in the art, at the time of the invention, to modify Yanagi and Nomura to include the use of at least first pixel capacitors and second pixel capacitors are provided on each of the pixels as the pixel capacitors as taught by Tomita in order to provide a LCD display with a stable high quality image without defects of flicker or non-uniformity (col. 2, lines 50-65 of Tomita).

Therefore, Yanagi and Nomura as modified by Tomita teach wherein the common electrode voltage supplying circuit is capable of respectively independently (fig. 13 Vcom1 and Vcom2 Yanagi) adjusting a common electrode voltage (fig. 12 Vcom1 and Vcom2 Yanagi) supplied to common electrodes [0128 Yanagi] corresponding to the first pixel capacitors (fig. 1 (CLc) Tomita) and common electrode voltages supplied to common electrodes corresponding to the second pixel capacitors (fig. 1 (Cs) Tomita).

16. In regards to claim 4, Yanagi and Nomura as modified by Tomita teaches the liquid crystal display device wherein: the common electrodes corresponding to the

second pixel capacitors (fig. 1 (Cs) Tomita) are divided into a plurality of groups (fig. 12 Vcom1 and Vcom 2 Yanagi), and the common electrode voltage supplying circuit supplies the common electrode voltage at a same value to the common electrodes corresponding to the first pixel capacitors (fig. 1 Clc Tomita) , and is capable of respectively adjusting the common electrode voltages supplied to the common electrodes corresponding to the second pixel capacitors independently every groups (fig. 12 Vcom1 and Vcom2 and fig. 13 Yanagi).

17. In regards to claim 5, Yanagi and Nomura as modified by Tomita teaches wherein: the common electrodes corresponding to the first pixel capacitors are divided into a plurality of groups (fig. 1 (group corresponding to 107 Tomita), and the common electrode corresponding to the second pixel capacitors are divided into a plurality of groups (fig. 1 group corresponding to 109 Tomita), and the common electrode voltage supplying circuit is capable of respectively adjusting the common electrode voltage supplied to the common electrodes corresponding to the first pixel capacitor independently every groups (fig. 13 Vcom 1 and Vcom 2 Yanagi) and is capable of respectively adjusting the common electrode voltages supplied to the common electrodes corresponding to the second pixel capacitors independently ever groups (fig. 13 Vcom 1 and Vcom 2 Yanagi).

18. In regards to claim 7, Yanagi and Nomura as modified by Tomita teaches wherein the common electrodes are grouped for n lines of the scanning lines (n includes one), where n is a positive integer (fig. 12 G(1), G(2) and G(3) Yanagi).

19. In regards to claim 9, Yanagi and Nomura as modified by Tomita teaches the liquid crystal display device as set forth in claim 7, wherein: the common electrode voltage supplying circuit supplies a common electrode voltage which functions as a reference common electrode voltage to a group corresponding to a scanning line positioned on the one side in a direction in which the scanning signals are disposed (fig. 12 Vcom1 Yanagi), and the common electrode voltage supplying circuit supplies a common electrode voltage which has a value different from a value of the reference common electrode voltage to a group corresponding to a scanning line positioned on the other side in the direction in which the scanning signals are disposed (fig. 12 Vcom2 Yanagi).

20. In regards to claim 11, Yanagi and Nomura as modified by Tomita teaches the liquid crystal display device wherein: the common electrode voltage supplying circuit supplies a common electrode voltage which functions as a reference common electrode voltage to a first group (fig. 1 group corresponding to 107) corresponding to a scanning line centered in a direction in which the scanning lines are disposed (fig. 12 Vcom1 Yanagi), and the common electrode voltage supplying circuit supplies a common

electrode voltages which is higher than the reference common electrode voltage to a second group (fig. 13 Vcom1 and Vcom2 voltage Yanagi) corresponding to a scanning line positioned on the one side in the direction in which the scanning lines are disposed (fig. 12 Vcom2),

Yanagi and Nomura as modified by Tomita differ in that they don't disclose using a third group.

However, under St. Regis Paper Co. v. Bemis Co., Inc. 193 USPQ 8, 11 (7th Cir. 1977) it is generally considered obvious to one of ordinary skill in the art to duplicate parts for multiple effect.

Therefore it would have been obvious to one of ordinary skill in the art to have modified Yanagi, Nomura and Tomita to include the common electrode voltage supplying circuit supplies a common electrode voltage which is lower than the reference common electrode voltage to a third group corresponding to a scanning line positioned on the other side in the direction in which the scanning lines are disposed, when a first and second group are taught above in order to increase the size of the display .

21. In regards to claim 14, Yanagi and Nomura as modified by Tomita teaches the liquid crystal display device as set forth in claim 7, wherein the common electrode voltage supplying circuit adjusts the common electrode voltages supplied to the groups so that luminance of the pixels gradually varies so as to be monotonously darker or so as to be monotonously brighter from one end side to a center of the scanning lines in a

direction in which the scanning lines are disposed ([0038] “An objective of the invention is to offer an active matrix liquid crystal display and a method of driving the display which allows for reducing the aforementioned difference in brightness that occurs between the top and bottom of the display screen” Yanagi). Examiner notes that Yanagi teaches adjusting the luminance [0102] and that such adjustments must be either monotonously darker or monotonously brighter.

22. In regards to claim 16, Yanagi and Nomura as modified by Tomita teaches the liquid crystal display device as set forth in claim 2, wherein the common electrode voltage supplying circuit adjusts the common electrode voltages so that luminance and color variation of the pixels are corrected so that a visual angle with respect to a liquid crystal panel, viewed from an arbitrary position in front of the liquid crystal display device, is wider than a visual angle in a case where the common electrode voltages of all the groups are equal to each other ([0038] “An objective of the invention is to offer an active matrix liquid crystal display and a method of driving the display which allows for reducing the aforementioned difference in brightness that occurs between the top and bottom of the display screen” Yanagi). Examiner notes that with corrected luminance as taught by Yanagi the viewing angle will increase.

23. In regards to claim 17, Yanagi and Nomura as modified by Tomita teaches the liquid crystal display device as set forth in claim 16, wherein the common electrode

voltage supplying circuit adjusts the common electrode voltages so that luminance and color variation of the pixels are corrected so that a visual angle with respect to a liquid crystal panel, seen from an arbitrary position in an up-and-down direction, is wider than a visual angle in a case where the common electrode voltages of all the groups are equal to each other. ([0038] “An objective of the invention is to offer an active matrix liquid crystal display and a method of driving the display which allows for reducing the aforementioned difference in brightness that occurs between the top and bottom of the display screen” Yanagi). Examiner notes that with corrected luminance as taught by Yanagi the viewing angle will also increase in the up and down direction because a screen that does not have proper luminance also does not have proper contrast both of which determine viewing angle.

24. In regards to claim 18, Yanagi and Nomura as modified by Tomita teaches the liquid crystal display device as set forth in claim 4, wherein the common electrode voltage supplying circuit adjusts the common electrode voltages so that luminance and color variation of the pixels are corrected so that a visual angle with respect to a liquid crystal panel, seen from an arbitrary position, is wider than a visual angle in a case where the common electrode voltages of all the groups are equal to each other. ([0038] “An objective of the invention is to offer an active matrix liquid crystal display and a method of driving the display which allows for reducing the aforementioned difference in brightness that occurs between the top and bottom of the display screen” Yanagi).

25. In regards to claim 19, Yanagi and Nomura as modified by Tomita the liquid crystal display device as set forth in claim 18, wherein the common electrode voltage supplying circuit adjusts the common electrode voltages so that luminance and color variation of the pixels are corrected so that a visual angle with respect to a liquid crystal panel, seen from an arbitrary position in an up-and-down direction, is wider than a visual angle in a case where the common electrode voltages of all the groups are equal to each other. ([0038] “An objective of the invention is to offer an active matrix liquid crystal display and a method of driving the display which allows for reducing the aforementioned difference in brightness that occurs between the top and bottom of the display screen” Yanagi). Examiner notes that with corrected luminance as taught by Yanagi the viewing angle will also increase in the up and down direction because a screen that does not have proper luminance also does not have proper contrast both of which determine viewing angle.

26. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yanagi and Nomura as modified by Tomita, in view of Nakao et. al (US 20010003431) hereinafter, Nakao.

27. In regards to claim 20, Yanagi and Nomura as modified by Tomita differ from the claimed invention in that Yanagi and Nomura as modified by Tomita do not disclose

wherein the common voltage supplying circuit includes: an input terminal for receiving a voltage which functions as a standard voltage of the common electrode voltages; a resistance element whose one end is connected to the input terminal; a constant current source for causing a constant current to flow to the resistance element; an output terminal, connected to other end of the resistance element, which outputs an output voltage; and a data latch circuit for outputting adjustment data, in accordance with which (i) a current value of the constant current caused to flow by the constant current source and (ii) a direction in which the constant current caused to flow are switched, to the constant current source.

However, Nakao teaches a system and method for wherein the common voltage supplying circuit includes: an input terminal for receiving a voltage which functions as a standard voltage of the common electrode voltages; a resistance element whose one end is connected to the input terminal; a constant current source for causing a constant current to flow to the resistance element; an output terminal [0067-0072], connected to other end of the resistance element, which outputs an output voltage; and a data latch circuit for outputting adjustment data, in accordance with which (i) a current value of the constant current caused to flow by the constant current source (fig. 4 (43) and (ii) a direction in which the constant current caused to flow are switched (fig. 4 (42)), to the constant current source
(fig. 2 (42)).

It would have been obvious to one of ordinary skill in the art, at the time of the invention, to modify Yanagi, Nomura and Tomita to include the use of a common

voltage supplying circuit as taught by Nakao in order to generate a reference voltage at each level of basis of a voltage supplied from an external reference voltage generating circuit as stated in ([0013] of Nakao).

28. Claims 22-27, 29, 33, 34, and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yanagi and Nomura in view of Nakao et. al (US 20010003431) hereinafter, Nakao.

29. In regards to claim 22, Yanagi and Nomura discloses the limitations of a reference voltage generating circuit adjusts the reference voltages (fig. 2 (4) Vsp Vsn Yanagi) of which is constituted of the pixels provided in a direction in which the scanning lines are disposed (fig. 1 G(1) G(2) – G(J) Yanagi).

Yanagi and Nomura differ from the claimed invention in that Yanagi and Nomura do not explicitly disclose reference voltages so that a predetermined gamma characteristic is obtained in an arbitrary line of lines.

However, Nakao teaches a system and method for reference voltages so that a predetermined gamma characteristic is obtained in an arbitrary line of lines (fig. 10 (39) [0013-0014]).

It would have been obvious to one of ordinary skill in the art, at the time of the invention, to modify Yanagi and Nomura to include the use of reference voltage which

provides gamma characteristics as taught by Nakao in order to provide proper gray levels as stated in ([0013] of Nakao).

30. In regards to claim 23, Yanagi and Nomura differ from the claimed invention in that Yanagi and Nomura do not disclose a correction information storage circuit for storing adjustment amounts of the reference voltages, wherein the reference voltage generating circuit adjusts the reference voltages in accordance with the adjustment amounts stored in the correction information storage circuit.

However, Nakao teaches a system and method for comprising a correction information storage circuit for storing adjustment amounts of the reference voltages, wherein the reference voltage generating circuit adjusts the reference voltages in accordance with the adjustment amounts stored in the correction information storage circuit. ((fig. 1 (43) [0065-0067] of Nakao).

It would have been obvious to one of ordinary skill in the art, at the time of the invention, to modify Yanagi and Nomura to include the use of storing adjustment amounts as taught by Nakao in order to be used by the gamma correction adjustment circuit during fine adjustments as stated in ([0065] of Nakao).

31. In regards to claim 24, Yanagi and Nomura as modified by Nakao teaches the liquid crystal display device as set forth in claim 22, wherein the reference voltage generating circuit adjusts the reference voltages so that a gamma characteristic is

obtained in a line (fig. 5 gamma adjustment of Nakao), constituted of the pixels, which is positioned on the one side in a direction in which the scanning lines are disposed and another gamma characteristic is obtained in a line, constituted of the pixels, which is positioned on the other side in the direction in which the scanning lines are disposed, said gamma characteristics being different from each other (fig. 12 (Vcom1 Vcom2 Yanagi).

32. In regards to claim 25, Yanagi and Nomura as modified by Nakao teaches the liquid crystal display device as set forth in claim 22, wherein the reference voltage generating circuit adjusts the reference voltages so as to obtain gamma characteristics different (fig. 5 gamma adjustment of Nakao) from each other in a first line constituted of the pixels provided on the one side in a direction in which the scanning lines are disposed , a second line constituted of the pixels provided on the other side in the direction in which the scanning lines are disposed (fig. 12 (Vcom1 Vcom2)) , and a third line (fig. 5 third line Nakao) constituted of the pixels provided between the first line and the second line so that the gamma characteristic obtained in the third line is intermediate between the gamma characteristic obtained in the first line and the gamma characteristic obtained in the second line (fig. 5 third line Nakao).

33. In regards to claim 26, Yanagi and Nomura as modified by Nakao teaches the liquid crystal display device as set forth in claim 21, wherein: the reference voltage

generating circuit (fig. 1 (4) Yanagi) adjusts the reference voltages so as to obtain a gamma characteristic (fig. 5 Nakao gamma correction) which causes luminance to decrease in a numerical order of the scanning lines (fig. 7 top and bottom rows Yanagi) in a case of using a liquid crystal panel whose luminance increases while a view point is moving from an upper direction to a lower direction with respect to the liquid crystal panel when an observer faces the liquid crystal panel ([0103] Yanagi), and the reference voltage generating circuit (fig. 1 (4) Yanagi) adjusts the reference voltages so as to obtain a gamma characteristic (fig. 5 Nakao gamma correction) which causes the luminance to increase in a numerical order of the scanning lines (fig. 7 top and bottom rows Yanagi) in a case of a liquid crystal panel whose luminance decreases while the view point is moving from the upper direction to the lower direction with respect to the liquid crystal panel when the observer faces the liquid crystal panel ([0103-0104] Yanagi).

34. In regards to claim 27, Yanagi and Nomura as modified by Nakao teaches the liquid crystal display device as set forth in claim 26, wherein: the common electrode voltage supplying circuit adjusts the common electrode voltages so that the luminance decreases in the numerical (“Further, the common signal Vcom is specified to change in polarity in the latter half of the non-scan period; reproduction of the original brightness is thereby ensured to a satisfactory degree. Especially, if the polarity change occurs immediately before the end of the non-scan period, reproduction of the original brightness is almost fully ensured. This further improves the display quality of the liquid

crystal display." [0039]) order of the scanning lines in the case of using the liquid crystal panel whose luminance increases while the view point is moving from the upper direction to the lower direction (fig. 7 top and bottom rows Yanagi) with respect to the liquid crystal panel when the observer faces the liquid crystal panel, and the common electrode voltage supplying circuit adjusts the common electrode voltages so that the luminance increases in the numerical order of the scanning lines in the case of using the liquid crystal panel whose luminance decreases while the view point is moving from the upper direction to the lower direction with respect to the liquid crystal panel when the observer faces the liquid crystal panel ([0102-0103] Yanagi).

35. In regards to claim 29, Yanagi and Nomura as modified by Nakao teaches the method as set forth in claim 28, wherein the common electrodes of the pixels are divided into a plurality of groups, and the common electrode voltages are respectively adjusted so as to be adjusted independently for each groups fig. 12 Vcom1 and Vcom 2 and G(1) G(2) and G(3) Yanagi).

36. In regards to claim 30, Yanagi and Nomura as modified by Nakao teaches the method as set forth in claim 28, comprising the step of generating reference voltages (fig. 1 (4) Yanagi), having plural levels, which cause gradation display to be made in accordance with a display signal, and adjusting the reference voltages ([0019] Nakao).

37. In regards to claim 31, Yanagi and Nomura as modified by Nakao the method as set forth in claim 30, wherein the reference voltages (fig. 1 (4) Yanagi) are adjusted so that a predetermined gamma characteristic is obtained in an arbitrary line ([0019] Nakao) of lines each of which is constituted of the pixels provided in a direction in which the scanning lines are disposed (fig. 7 top to bottom Yanagi).

38. In regards to claim 32 Yanagi and Nomura as modified by Nakao teaches The method as set forth in claim 29, wherein the common electrode voltages are adjusted so that luminance and color variation of the pixels are corrected so that a visual angle with respect to a liquid crystal panel, viewed from an arbitrary position, is wider than a visual angle in a case where the common electrode voltages of all the groups are equal to each other ([0102] Yanagi).

39. In regards to claim 33, Yanagi and Nomura as modified by Nakao teaches the method as set forth in claim 32, wherein the common electrode voltages are adjusted so that luminance and color variation of the pixels are corrected so that a visual angle with respect to a liquid crystal panel, viewed from an arbitrary position in an up-and-down direction, is wider than a visual angle in a case where the common electrode voltages of all the groups are equal to each other ([0102] Yanagi).

40. In regard to claim 34, Yanagi and Nomura as modified by Nakao teaches the method as set forth in claim 33, wherein the common electrodes in each of the pixels are sequentially grouped for n lines of the scanning lines (n includes one), where n is a positive integer (fig. 12 the scanning lines are at least grouped into one group Yanagi).

41. In regards to claim 36, (New) Yanagi and Nomura as modified by Nakao teaches the method as set forth in claim 29, wherein the adjusting the common electrode voltages adjusts the common electrode voltages to correct luminance and color variation of the pixels such that a visual angle with respect to the liquid crystal panel, viewed at least from an arbitrary position in front of the liquid crystal display device in a direction perpendicular to an extending direction of the scanning lines, is wider than a visual angle if the common electrode voltages of all the groups are equal to each other ([0102] Yanagi).

Response to Arguments

42. Applicant's arguments filed 05/05/2009 have been fully considered but they are not persuasive.

43. In response to Applicant's remarks that the prior art of record fails to teach such that the driving voltages decrease the viewing-angle-derived difference of luminance of pixels which are generated (Remarks, pg 15, 3rd ¶). Examiner respectfully disagrees.

44. Examiner contends that the viewing angle is an inherent characteristic of the brightness.

45. MPEP 2112 states:

III. A REJECTION UNDER 35 U.S.C. 102/103 CAN BE MADE WHEN THE PRIOR ART PRODUCT SEEMS TO BE IDENTICAL EXCEPT THAT THE PRIOR ART IS SILENT AS TO AN INHERENT CHARACTERISTIC

Where applicant claims a composition in terms of a function, property or characteristic and the composition of the prior art is the same as that of the claim but the function is not explicitly disclosed by the reference, the examiner may make a rejection under both 35 U.S.C. 102 and 103, expressed as a 102/ 103 rejection. "There is nothing inconsistent in concurrent rejections for obviousness under 35 U.S.C. 103 and for anticipation under 35 U.S.C. 102." *In re Best,* 562 F.2d 1252, 1255 n.4, 195 USPQ 430, 433 n.4 (CCPA 1977). This same rationale should also apply to product, apparatus, and process claims claimed in terms of function, property or characteristic. Therefore, a 35 U.S.C. 102/ 103 rejection is appropriate for these types of claims as well as for composition claims.

IV. EXAMINER MUST PROVIDE RATION-ALE OR EVIDENCE TENDING TO SHOW INHERENCY

The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. *In re Rijckaert*, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993) (reversed rejection because inherency was based on what would result due to optimization of conditions, not what was necessarily present in the prior art); *In re Oelrich*, 666 F.2d 578, 581-82, 212 USPQ 323, 326 (CCPA 1981). "To establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill."

46. Examiner notes that viewing angle and luminance, or brightness, are closely related. Many manufacturers of screens determine the viewing angle as the angle at which the luminance of the image is exactly half of the maximum. Thus, since luminance is non-linear, if the luminance is decreased the viewing angle will also be decreased. Further in support of examiner's position examiner points to fig. 8 of Andrade et al (U.S. patent 6,954,193).

In response to applicant's argument that Yanagi is silent with respect to a difference in viewing angles between lines and a difference in brightness which is due to the difference of the viewing angle, a recitation of the intended use of the claimed invention

must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. The structure of Yanagi is able to decrease the difference in brightness between the top and bottom of display screen and thus quality is improved ((abstract) Yanagi). As stated above, if there are irregularities in the brightness between the top and the bottom of the display, there will also be irregularities in the viewing-angle between the top and the bottom of the display.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Andrade et al (6,954,193) Method apparatus for correcting pixel level intensity variation.

47. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to GRANT D. SITTA whose telephone number is (571)270-1542. The examiner can normally be reached on M-F 9-6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sumati Lefkowitz can be reached on 571-272-3638. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Bipin Shalwala/
Supervisory Patent Examiner, Art Unit 2629

/Grant D Sitta/
Examiner, Art Unit 2629

July 29, 2009